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## **GP Training practices in England: a description of their unique features based on national data**

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### **Abstract**

Postgraduate general practitioner (GP) training structures have been reorganised over recent years with the formation of Health Education England (HEE) and new approaches to the recruitment and development of GP Training Practices. We aimed to broaden the findings of previous studies and identify key features of GP training practices. In particular, we wanted to extend previous findings regarding QOF achievement and patient experience derived from the General Practice Patient Survey (GPPS), with more recent data on the use of urgent cancer referral pathways ('Two Week Wait', or '2WW,' referrals) and secondary care utilisation by GP training Practices.

We compared training and non-training practices, adjusting the analysis for differences in practice size and demographic features. Compared with non-training practices, we found reported patient satisfaction with 'access' was 2.0% higher ( $P<0.001$ ), 'communication' was 0.75% higher ( $P<0.001$ ), 'overall experience' was 2.8% higher ( $P<0.001$ ), 'continuity of care' was 2.2% lower ( $P<0.001$ ). Mean QOF scores were 11 points higher in training practices ( $P<0.001$ ). There were few differences between the two types of practice in terms of Emergency hospital admissions, Ambulatory Care Sensitive (ACSC) admissions, Accident and Emergency attendances and Out-Patient attendances. Training practices used the 2WW referral pathway more frequently than non-training practices resulting in a 1.1% higher 'cancer detection rate' ( $P=0.007$ ).

### **Introduction**

General Practitioner (GP) training practices have a dual accountability. Like all general practices in England, they are accountable to health service managers who both commission them and hold their contracts. In addition, training practices are regulated through postgraduate training structures. The General Medical Council set educational standards for postgraduate training. These standards are quality managed by Local Education and Training Boards (LETBs) and deaneries through inspection of

practices and trainers. These educational responsibilities are known to play a role in shaping the provision of care by training practices. For instance, a focus on consultation skills in workplace-based training is associated with higher reported patient satisfaction with the GP and higher overall patient experience ratings (1,2).

It is now possible to study several aspects of practice level referral activity in England. Data cover the use of out-patient, Accident and Emergency and in-patient utilisation and also provide specific information on cancer referrals and the use of the urgent cancer referral pathway ('Two Week Wait' referrals). Postgraduate education is a plausible influence on use of the urgent cancer referral pathways, with training constituting part of the response to reports of late cancer diagnosis in primary care (3). Less clear is the role of postgraduate education in terms of general out-patient, Accident and Emergency (A&E) attendance and in-patient Emergency Admissions. It could be argued that educational input reinforces the potential of primary care, shifting care away from secondary care services (4). Conversely, educational input may increase awareness of the potential benefits of earlier and more frequent referral to secondary care (5).

We therefore aimed to extend previous findings about GP training practices and identify the characteristics of these practices in terms of their use of urgent cancer referral pathways and their secondary care utilisation rates. We also aimed to update previous findings relating to Quality and Outcomes Framework (QOF) achievement and the national survey of patient experience (GP Patient Survey)(6).

## **Methods**

### **Study design**

We conducted a retrospective cross-sectional analysis of data from the year, 2013/2014.

### **Practice data**

Descriptive data for all general practices in England, including GP training practice status, was obtained from NHS Digital (7). Sociodemographic data for each practice including social deprivation (Index of Multiple Deprivation – 2015) and ethnicity were obtained from national census data and applied to each practice based on data for the numbers of registered patients living in each census locality ('Lower Layer Super Output Area'). We also obtained QOF data for each practice.

We excluded some practices with fewer than 750 patients, or fewer than 500 patients per GP, or more than 5000 patients per GP, on the grounds that these practices were likely to be atypical and using a previously described method (8).

### **GP Patient Survey data**

GPPS data for the calendar year 2014 were obtained from Ipsos MORI (9). In 2014, a total of 2.7million GPPS questionnaires were mailed out to a random sample of patients registered at each practice; following one reminder, the response rate was 34.9% (943,138 responses). Data were available at practice level.

GPPS scores were converted into percentage values for patients reporting a 'good' or 'excellent' experience (the highest two possible responses on a 5-point scale). Scores were categorised according to the following domains based on GPPS responses (9): satisfaction with access (Questions 3, 18); satisfaction with doctor communication (Questions 21a-e); satisfaction with continuity of care (Question 9); overall patient experience (Question 28).

### **Secondary care referral data**

Secondary care referral data were obtained from two sources. Practice level data describing hospital utilisation rates were obtained from NHS England (10) and covered out-patient and A&E attendances; also Emergency hospital admissions and Ambulatory Care Sensitive Condition (ACSC) hospital admissions. ACSCs are considered to be conditions which might be amenable to primary care input, some of which may be avoidable admissions (11).

Cancer referral data were obtained from the National Cancer Intelligence Network (12). These describe three variables which relate to use of the urgent cancer referral pathway:

- the proportion of referrals in which a cancer diagnosis was confirmed ('conversion rate'), measured as a percentage
- the proportion of all cancers diagnosed following referral through the urgent cancer referral pathway, as opposed to diagnosis following A&E or routine out-patient attendance ('detection rate'), measured as a percentage
- the frequency with which the urgent cancer pathway is used ('referral ratio'), measured as annual referrals per 1000 registered patients

### **Statistical methods**

We used univariate statistics to compare the characteristics of training and non-training practices, deriving P values for the significance of differences between the two types of practice using Mann-Whitney tests for non-parametric variables and unpaired t-tests for parametric variables.

We conducted a multivariable linear regression analysis in order to adjust our comparisons between training and non-training practices for differences in social deprivation, ethnicity (South Asian and African Caribbean), number of full-time equivalent (FTE) GPs in the practice (based on the assumption of one full time GP working 37.5 hour/week), list size per FTE GP and number of FTE practice nurses.

Differences between the two types of practice were expressed as unadjusted (raw) and adjusted values. Outcome variables which were normally distributed were presented as mean differences between training and non-training practices. However, In order to fulfil the requirements of regression modelling, values which were not normally distributed were converted to log values; following this conversion, differences between the two types of practice were expressed as ratios.

All analysis was conducted using STATA 14

### **Results**

The final sample, after exclusions, consisted of 7792 practices. Of these, 1974 (25.3%) were training practices. The characteristics of these practices are summarised in Table 1.

The differences between training and non-training practices based on univariable analysis are summarised in Table 2 and the differences following adjustment are presented in Table 3. Following adjustment, patients registered at training practices reported higher satisfaction in three domains: access, communication and overall patient experience. However, lower levels of satisfaction with continuity of care were reported in training practices.

Training practices achieved 21 QOF points more than non-training practices. This difference reduced to 11 QOF points after adjustment, which remained significant.

Secondary care utilisation by training practices showed no significant difference in rates of Emergency Admissions, ACSC admissions or out-patient attendances. Although A&E attendance rates were significantly lower in training practices, the difference was small.

Three urgent cancer referral pathway variables were analysed. Training practices were characterised by significantly higher cancer detection rates and cancer referral rates, although cancer conversion rates were significantly lower in these practices.

## **Discussion**

### **Summary**

Our findings have demonstrated some key characteristics of GP training practices in terms of reported patient experience, QOF achievement, secondary care utilisation and urgent cancer referrals. Distinctive features of GP training practices were higher patient satisfaction ratings (with the exception of continuity of care), higher QOF achievement and higher cancer 'referral rates' and 'detection rates'. In contrast, there were few differences between training and non-training practices in terms of secondary care utilisation and these differences were small.

### **Strengths and Weaknesses**

Any comparison between GP training and non-training practices has to rely on data collection methods and the absence of any qualitative data meant that our findings were dependent upon available numerical data. However, the use of a national dataset meant that error was not introduced into the analysis through sampling bias. Nationally collected data may misrepresent some aspects of general practice. For example, 'Full Time Equivalent' staffing data is self-reported and not independently validated. Moreover, many GPs, particularly GP partners, work far longer than the assumption of a 37.5 hour week although these data are not available from NHS Digital.

GP Patient Survey sampling is purposive and designed to overcome the potential shortcomings of a relatively low response rate. Validation studies have confirmed that in spite of the response rate, the findings are representative (13).

All observational studies are hampered by the difficulties of inferring causality in observed associations. For this reason, it is important to ensure plausibility of association and for further work to retest observed associations in other settings or time-frames.

## Comparison with existing literature

This study adds to the literature on GP training practices (1,2) with new positive findings about QOF achievement and use of the urgent cancer referral pathways and negative findings on overall secondary care utilisation.

Previous studies have reported higher QOF performance in GP training practices (1). QOF performance was previously reported as higher in both clinical and managerial domains (1) although we did not analyse different domains because QOF targets have evolved with much less recent focus on managerial targets. It is possible that focussing on clinical long-term condition targets has played more to the strengths of GP training practices, given the emphasis on clinical care in GP training and conversely, that 'managerial' achievement may not be prioritised to the same extent. Similarly, higher reported satisfaction with 'access', 'communication' and 'overall experience' are positive attributes which fit well with the training ethos. Less expected were the lower reported satisfaction for 'continuity of care'. Even though this finding was adjusted for practice size (training practices being larger than non-training practices), it is possible that educational activity and regular changes of GP registrars contributed to lower reported continuity. In our previous study based on 2012 survey data and using similar methodology, we found 'continuity of care' was one of the few patient experience attributes not reported to be higher in training practices (the association was 'not significant') (2). The lack of positive association with GP training appears to be consistent.

The findings in relation to secondary care utilisation are new, even though the associations with the four aspects of secondary care usage included in our study lacked size or significance. Some have seen 'education' as a means by which secondary care referral can be reduced although the evidence points to mixed effects of educational interventions with little evidence of consistent and sustained reductions in secondary care referral following educational input (5). Our findings do not support the notion that training practices are likely to have substantially lower rates of secondary care utilisation.

Early diagnosis of cancer is both a public health and an educational priority. Increasing awareness that delays in primary care have contributed to overall delays in cancer diagnosis and poor international standing of UK cancer survival figures has emphasised the importance of educational interventions and 'red-flag symptom' recognition (14). Skills taught as part of GP training such as shared decision making with the patient, team building within the primary care team and consultation training are likely to produce an infrastructure conducive to early cancer diagnosis. More rapid cancer diagnosis will result from increased use of the urgent cancer referral pathway and in fewer cases of cancer being diagnosed outside the pathway where delays are greater; in both these respects, training practices demonstrated higher performance than non-training practices. Lower 'conversion rates' in training practices are to be expected as a concomitant of higher referral rates, and are a feature of a lower threshold for referral. Low 'conversion rates' should not be automatically perceived as a 'negative' indicator. One year after the dataset used in this study, the NICE 2015 Cancer Guidelines were released, reducing the referral threshold with the likely consequence of subsequent reductions in the 'conversion rate'. It may be that at the time of the study, GP training practices had been anticipating this lower referral threshold and further work is needed to determine the response of GP training practices to more recent recommendations.

Our findings demonstrate the importance of using statistical adjustment so that 'like is compared with like'. For example, without adjustment using regression analysis, patient satisfaction with access is lower in training practices. It is only when adjustment is made for factors such as deprivation and practice size, that higher patient satisfaction with access is identified.

## **Implications for practice**

GP training practices have several distinctive features which, we would argue, are a product of the educational ethos of postgraduate training. Although the role of the GP registrar was excluded from our staffing calculations, their contribution to overall practice workload remains unclear. Only further practice-level qualitative enquiry could determine the extent to which the GP registrar in training practices added to or reduced workload or directly influenced referral patterns. We found no substantial differences in secondary care utilisation in training practices, although it is clear that current policy initiatives are increasingly directed at shifting care away from secondary care services and redirecting care into the community, 'closer to the patient'. It is important for GP training to engage closely with this policy direction and determine the extent to which training can contribute to new models of care outside hospital.

The 'improved' urgent cancer referral patterns seen in training practices suggest that education can make a substantial difference to addressing current delays in cancer diagnosis in the UK. If the association is confirmed, further testing of the value of educational input should be considered to determine effective interventions to improve performance in general practices which underuse the urgent cancer referral pathways.

## **Conclusion**

GP training practices differ from non-training practices in terms of measures of clinical achievement, patient experience and service utilisation. Many of the differences appear to be linked to the ethos of postgraduate training although the potential role of GP registrars to the total GP workforce and workload may have contributed to the distinctive features of training practices. We report the new finding that training practices make increased use of the urgent cancer referral pathway and this is likely to contribute to earlier cancer diagnosis (15).

Table 1: The characteristics of GP training practices and non-training practices, 2013/14.

Variable	Non-training Practice (n=5818) Mean (SD)	Training Practice (n=1974) Mean (SD)	P-value
Number FTE GPs, excluding registrars*	3.6 (2.2)	5.6 (2.6)	<b>&lt;0.001</b>
List size per FTE GP*	1914 (918)	1930 (832)	0.50
Number GP registrars	0.0 (0.0)	1.7 (1.0)	<b>&lt;0.001</b>
Index of Multiple Deprivation, 2015	27.6 (17.8)	23.2 (15.7)	<b>&lt;0.001</b>
Patient age: % ≥50 years	34.3 (9.9)	35.9 (9.2)	<b>&lt;0.001</b> <sup>Δ</sup>
Satisfaction – Access	84.4(9.1)	83.6(8.4)	<b>&lt;0.001</b>
Satisfaction – Communication	86.7(5.2)	87.8(3.8)	<b>&lt;0.001</b>
Satisfaction – Experience	83.7(9.3)	86.7(7.4)	<b>&lt;0.001</b>
Satisfaction – Continuity	57.5(13.7)	60.6(10.0)	<b>&lt;0.001</b> <sup>Δ</sup>
QOF total	838(72)	858(48)	<b>&lt;0.001</b>
Cancer conversion**	10.3(5.6)	9.3(3.6)	<b>&lt;0.001</b>
Cancer detection**	46.9 (15.5)	49.9(10.9)	<b>&lt;0.001</b> <sup>Δ</sup>
Cancer referral rate**	2200(1008)	2616(853)	<b>&lt;0.001</b>
A&E attendance rate†	335(114)	300(89)	<b>&lt;0.001</b>
Emergency admission rate†	90.9(27.1)	87.6(20.1)	<b>&lt;0.001</b>
ACS admission rate†	15.5(6.1)	14.8(4.4)	<b>&lt;0.001</b>
OP attendance rate†	63.3(19.1)	63.1(14.1)	0.74

\* FTE = Full Time Equivalent; † rate per 1000 registered patients, per annum;

\*\* Cancer conversion, cancer detection and cancer referral rate all refer to the Two Week Wait (2WW) referral pathway; ‘conversion’ = % of all cases referred through 2WW who had a cancer diagnosed; ‘detection’ = % of all cancers in registered patients which were diagnosed following 2WW referral; ‘referral rate’ = rate of referrals

Δ P value derived by parametric testing; all other P values derived using non-parametric testing



Table 2: Differences in outcomes between training and non-training practices, 2013/14.

Variable	Analysis	Difference <sup>(*)</sup> : Training practice values compared to non-training practice values Mean (95% CI)	P-value
Satisfaction: Access	Unadjusted Adjusted	-1.0 (-1.4, -0.5) 2.0 (1.5, 2.4)	<b>&lt;0.001</b> <b>&lt;0.001</b>
Satisfaction: Communication	Unadjusted Adjusted	1.1 (0.8, 1.3) 0.75 (0.5, 1.0)	<b>&lt;0.001</b> <b>&lt;0.001</b>
Satisfaction: Experience	Unadjusted Adjusted	2.8 (2.4, 3.3) 2.8 (2.3, 3.2)	<b>&lt;0.001</b> <b>&lt;0.001</b>
Satisfaction: Continuity	Unadjusted Adjusted	3.5 (2.9, 4.2) -2.2 (-2.8, -1.4)	<b>&lt;0.001</b> <b>&lt;0.001</b>
QOF total	Unadjusted Adjusted	21 (17, 24) 11 (7, 15)	<b>&lt;0.001</b> <b>&lt;0.001</b>
Cancer detection rate	Unadjusted Adjusted	2.9 (2.1, 3.6) 1.1 (0.3, 2.0)	<b>&lt;0.001</b> <b>0.007</b>
Cancer referral rate	Unadjusted Adjusted	418 (368, 467) 221 (173,269)	<b>&lt;0.001</b> <b>&lt;0.001</b>
Variable		Difference <sup>(**)</sup> Ratio (95% CI)	P-value
Cancer conversion rate	Unadjusted Adjusted	0.97 (0.94, 0.99) 0.93 (0.91, 0.96)	<b>0.02</b> <b>&lt;0.001</b>
A&E attendances	Unadjusted Adjusted	0.91 (0.90, 0.92) 0.98 (0.96, 0.99)	<b>&lt;0.001</b> <b>0.002</b>
Emergency admissions	Unadjusted Adjusted	0.98 (0.96, 0.99) 0.99 (0.98, 1.01)	<b>0.004</b> 0.81
ACSC admissions	Unadjusted Adjusted	0.98 (0.96, 1.00) 1.0 (0.98, 1.02)	<b>0.01</b> 0.61
Out-patient attendance	Unadjusted Adjusted	0.99 (0.97, 0.99) 0.98 (0.97, 1.00)	0.05 0.06

\*Differences between practices expressed as absolute values, adjusted for age, deprivation, ethnicity and practice staffing.

\*\*Differences between practices expressed as ratios since the outcome variable was log transformed to overcome skewed distribution; values <1.0 mean lower training practice value.

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